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P A P E R S

IN

A G R I C U L T U R E.



E

AGRICULTURE.

THE GOLD MEDAL of the Society was this Session adjudged to JOHN CHRISTIAN CURWEN, Esq. M.P. of Belle-isle, on Winandermere Lake, between Westmoreland and Lancashire, for his PLANTATIONS of TIMBER TREES. The following ACCOUNTS and CERTIFICATES were received from him.

SIR,

I HAVE the pleasure of transmitting to you herewith Certificates from the Nursery-men who supplied me with trees for my Plantings, between October, 1800, and April, 1801; also, Certificates from the persons who superintended the different Plantations; and Attestations of the Trees being in a flourishing condition, and perfectly well fenced.

E 2

I am

I am highly sensible of the favours already received from the Society. The efforts I have made, and shall continue to make, are the best proofs I can give of the value and estimation in which I hold them, and how ambitious I am of being still farther indebted to them. I shall be highly gratified, should I be successful in the present instance, for any of the Premiums of the Society.

The quantities planted by me, between October, 1800, and April, 1801, are as follow:

Oak	-	-	-	271,420	Brought forward	773,416			
Larch	-	-	-	229,476	Birch	-	-	-	21,540
Ash	-	-	-	240,800	Alders	-	-	-	10,000
Scotch Fir	-	-	-	23,600	Elm	-	-	-	10,000
Beech	-	-	-	8,120					
				<hr/>					<hr/>
				773,416					814,956

I also transmit you Certificates of the quantity of ground planted with Osiers at Workington.

Encouraged by the wishes of the Society, I beg leave to submit a few observations I have made in the course of my

my planting. From the difficulty of getting transplanted Larches, I was induced to try two years seedlings, which I have found to answer extremely well; fewer plants are lost, and the saving in expense is one half. I have applied the thinnings of my Larch Plantations, of sixteen years growth, for railing for waggon-roads, and find them to answer. The trees square from 5 inches to $4\frac{1}{2}$, and are not much inferior to Oak of twice that age. To try the durability of Larch, I have built a new boat of it; the plank about forty years growth, the timbers sixteen. I have also made one of the best Oak of the country. I am sanguine in my expectations that the Larch will not prove inferior to the Oak. The upper strata, or soil, does not appear to contribute any thing to the growth of the Larch, at least in such strata as mine (a gravel). I was led to this opinion from the progress made by some Larch planted upon a road

E 3

which

which had been changed ; and, wanting soil, I stripped a whole acre, and then planted it in this state with Larch ; and also as much adjoining land on soil not removed. I do not perceive there is any difference in the plants ; they appear equally thriving. This may, in some instances, be a convenience in ornamental plantings.

The large quantities of Ash which I have planted with the Oak, is with a view of cutting them for underwood. I question if there be any thing so profitable. The demand for hoops has within twenty years doubled the value of the woods in this neighbourhood. There are acres of wood, which, at fifteen years growth, will leave a clear profit of forty-five pounds. Supposing this to proceed for ninety years, with interest, the acre would produce £815 ; four times, I should suppose, the amount of the best acre of Oak in the kingdom.

The

The Osiers are to supply the place of the Hazel, in making coal-baskets for my Coal Works. I do not know whether it has ever been tried ; but should it answer, it will be of great service.

My Larch Plantations are making a rapid progress ; and in a few years the thinnings will become of considerable value. The Oak from the Acorn does not generally answer.

I have the honour to be,

SIR,

Your obedient humble Servant,

J. C. CURWEN.



The above letter was accompanied with the following certificates, viz. from Messrs. Cook and Atkinson, of Keswick, dated April 4, 1803,—stating, that they have supplied Mr. Curwen, between October, 1800, and March, 1801, with 1600 Larch, and 2100 Beech

E 4

trees,

trees, and that they now appear in a thriving condition at Belle Grange.

From Messrs. Archibald Dickson, jun. and Co. of Hassendeanburn,—stating, they had supplied, between October, 1800, and March, 1801, inclusive, 19,500 transplanted Larch trees; and in March and April, 1802, 3000 transplanted Larches, and 10,000 two years seedling Larch, at Workington.

From Mr. William Thompson, at Pickhill, near Bedale,—stating, he had supplied, between October, 1800, and March, 1801, 40,000 Larches, which appear in a thriving condition, at Belle Grange.

From Messrs. Archibald Dickson and Sons,—that they had supplied 44,800 seedling Larches, in 1799; and a certificate from Mr. William Turnbull, gardener, at Workington,—that he planted for Mr. Curwen the principal part of the above Larches at Workington,

ton, and that the remainder were sent to Winandermere, dated June 25, 1803. Likewise, from Mr. William Slee, dated June 20, 1803,—stating, he planted the remainder for Mr. Curwen.

From Mr. John Dover, of Roger-scales,—stating, that he had furnished, between October, 1800, and April, 1801, 9856 trees of several sorts; and a certificate from William Unwin, gardener to Mr. Curwen,—that he had planted the said trees between October, 1800, and April, 1801.

From Mr. William Slee,—stating, he had supplied, between October, 1800, and March, 1801, to Mr. Curwen's sundry plantations at Workington, Belle Grange, and Ewanrig, 702,000 trees, consisting of Oak, Larch, Scotch Fir, Elm, Birch, Beech, Alder, and Ash.

The certificate likewise states, that he had conducted the planting of the trees furnished by Saunders, Thompson, Clark, and Atkinson, and the
Oaks

Oaks furnished by Saunders; that *the whole plantations extended over three hundred acres and upwards*, part of which had failed with acorns; that he also planted the Larches received from Workington; and that the whole is fenced with a six-feet wall, and was in a thriving condition on the 30th of June, 1803.

From Mr. J. Johnson, dated Ewanrig Hall, July 4, 1803,—stating, that the Larches planted at Ewanrig Hall, in October, 1800, and April, 1801, were in a thriving condition, and well protected by a thorn fence and railing: also from the Rev. H. J. Marke, confirming the above.

From the Rev. Peter How, dated June 27, 1803,—stating, that he had viewed the plantations at Workington and Harrington, planted between October, 1800, and April, 1801, containing between 30 and 40 acres; that they are in a flourishing condition, and well fenced;

fenced; that he had also viewed the two plantations of Osiers, which are healthy, well fenced, and watered.

From Mr. John Gash, Land Surveyor, —testifying that the Willow plantations in Workington are 4 statute acres, 19 perches, and are in a thriving condition.

From the Rev. Reginald Brathwaite, Minister of Hawkshead, dated July 26, 1803,—stating, that he had viewed the plantations beyond Belle-isle; that the trees are in a flourishing condition, and perfectly secured by stone walls; and that the Larches growing on the spot where the soil had been removed, were apparently as healthy as the others.

An explanatory letter was also received from J. C. Curwen, Esq. dated December 5, 1803,—stating, that a large quantity of the Oak and Ash were planted in the Heald, near Winandermere, containing 220 acres, on land which had been previously sown with Acorns, but which had failed; that 80 acres were

were entirely planted afresh; and when Oak and Ash were used, 6000 were planted on an acre. The Larch, one in each square yard, or 4600 per acre. The soil was in general a light loam, with rock underneath, near the surface. That in planting at Winandermere, he used hacks pointed at one end, and about $3\frac{1}{2}$ inches broad at the other; finding this implement to answer much better in making the holes for the plants. The ground at Workington is upwards of thirty acres; at Ewanrig three. That the soil being strong clay, and very wet, he had made open drains to take off the water, and opened the pits with a spade. That, as both places were exposed to the sea, he had planted them with Larches; that by having the same growth, they do not overtop each other; and that he finds this to answer an admirable purpose, and can recommend it from the experience of nearly thirty years.

In

In those spots where he has planted the Scotch Fir, they are all of the same kind; he has never attempted to use them as screens. That when the water is completely taken from the roots of trees, he believes they will bear any storm, provided it be not a current of air, which he sees, in all instances, is most injurious to trees, and difficult to overcome.

The Osier ground is strong clay; he has planted them on ridges, with a good ditch on each side, and laid up the best of the soil. The water can be let in at pleasure. In winter, he keeps them dry; and early in the spring, shuts in the water.

That the Larches near the Ferry, planted on a gravelly hill, whence the soil had been previously removed, were as thriving as those planted in other parts, where the soil had not been removed.

The

The GOLD MEDAL of the Society was this Session adjudged to J. ARTHUR BORRON, Esq. of Warrington, in Lancashire, for his PLANTATION of OSIERS; from whom the following ACCOUNTS and CERTIFICATES were received.

SIR,

I BEG leave to transmit to you the following claim to the honorary Medal of the Society, which I find is continued to be offered for the present year, for the planting of Osiers. Being possessed of a piece of land, which, from its great depth of soil and moistness, appeared proper for their growth, I caused it, last spring, to be pared with a plough, and trenched by the spade, sixteen inches deep, in beds of $7\frac{1}{2}$ feet in width. It was afterwards planted, in the months of February, March, and April,

April, with the large white Osier, Spanish, and new kinds. The whole of the land planted is, by an accurate ad-measurement, exclusive of the fences, 34 acres, 1 rood, 20 perches, statute measure. The number of plants was upwards of 600,000. They are now in a flourishing state, some of them eleven feet high, notwithstanding the unusual dryness of the summer, of which you have a proper certificate.

Perhaps it may not be unimportant, or foreign to the views of the Society, to state a method I have taken to insure their future welfare, as it may tend to the application of it to other plants of similar habits, which are not at present cultivated in this kingdom. Through the middle of the land flowed a brook, which was almost constantly level with a great part of the land, and which rendered it unhealthy for vegetation. By taking the water on a higher level, up the stream, and afterwards

wards dividing it, so as to encircle the plantation, and finally discharging it, when not wanted, at the farthest end, above 1000 yards distant, the following objects were gained :—First, a part of the bed of the old brook served as a complete drain for the whole.—Secondly, the new courses formed, with a quickset, an excellent fence for the plantation ; and, by means of flood-gates at the farthest junction, the water is thrown at pleasure, the hottest day in summer, between the beds of Osiers ; the divisions between which are 20 inches wide, and 16 deep, clean shovelled out. These are in an horizontal direction, and nearly level. They are intersected by a water-course at right angles, from the highest to the lowest part of the ground, communicating at the top with the brook, which, when introduced, is thrown to any height, by small stops in the divisions : when these are removed, it serves
as

as a drain.—Thirdly, the difference of land gained by almost filling up the old brook, and the space occupied by the new ones, is nearly two acres. It will be observed that, by this method, which perhaps I might call Egyptian, I can give the plants, at all times, that proportion of moisture, when they most want it, and which is most congenial to their growth; and in winter, except in high floods, they may have that dryness which is as necessary to their health. This mode is well known, as applied to floating meadows; but I believe is novel in every other application. If I have been too prolix, or taken up too much attention on this subject, I shall hope to be excused.

I am, SIR,

Your most obedient Servant,

J. A. BORRON.

Warrington, Nov. 21,
1803.

CHARLES TAYLOR, Esq.

F

Two

Two Certificates accompanied this letter: one from the Rev. Johnson Grant, Curate of Warrington; and the other from Mr. John Curwen, Bailiff to Mr. Borron, stating, that J. A. Borron, Esq. had planted, in the months of February, March, and April last, nearly thirty-five acres of land, with upwards of six hundred thousand Osier plants, of the new kind, Spanish and White Osier, there not being less than 20,000 plants on each acre; and that the same are properly fenced, and are now in a thriving condition.

The

The GOLD MEDAL of the Society was this Session voted to THOMAS PLOWMAN, Esq. of Broome, in Norfolk, for an improved SHEEPFOLD; from whom the following Accounts and Certificates were received; and to which an Engraving on Wood, and Description, are annexed.

SIR,

WITH this you will receive a Model of a Sheepfold, invented by me, on an improved and very simple principle, combining many advantages over the old and expensive method of folding by hurdles; and as the whole Fold can be removed with ease at all times, it will be found peculiarly useful in feeding off turnips on the land in frosty weather, when hurdles cannot be used; and, as the saving of labour in Agriculture is a leading object, I

F 2

have

have no doubt of seeing it, in a very few years, generally adopted.

The expense, in the first instance, will exceed that of hurdles, for the same given quantity of sheep; but having had one in use nearly three years, I am satisfied the saving will be very considerable: for, before I adopted this method of folding, I lost from thirty to forty nights folding in the year, owing to the land being hard, in dry seasons, such as the two last; which renders folding almost impracticable, as they never can be set without great labour and destruction of hurdles. I am also clearly of opinion, that the stock of sheep will be greatly increased when this method of folding becomes more known; and that it will enable many small farmers to keep from 50 to 100 sheep, who now are deterred from it, on account of the small quantity of feed they have, not answering to keep a man for that purpose only; but

but by this plan, they may keep a boy at 3s. or 3s. 6d. per week, who can attend on 100 or 200 sheep, and move the fold himself without any assistance. In heavy gales of wind it frequently happens that hurdles are blown down, and the sheep, of course, being at liberty to range over the crops, do incalculable mischief; which cannot happen with my fold,

In some counties in England, where hogs are folded, great difficulties are experienced for want of stowage, for them to feed off winter tares, &c. &c. as they root up every stake or hurdle; and having tried the experiment, I am certain my fold will keep them in, and defy their attempts to displace it.

I have inclosed a drawing, which you will find to correspond with the model, and a description, by which you will see what an astonishing quantity of time is saved, when a man can remove a fold to contain 300 sheep in five mi-

nutes, which, by the old method, frequently takes some hours to accomplish.

I have also enclosed a Certificate of gentlemen, who are now using folds from my model ; and I have the honour to add the testimony of his Grace the Duke of Bedford in its favour, for whom I have a Sheepfold now making.

If this Fold should appear to the Society to possess the merit which I think it does, I shall be happy to receive any honorary mark of distinction they may please to confer on,

SIR,

Your very obedient Servant,

THOS. PLOWMAN,

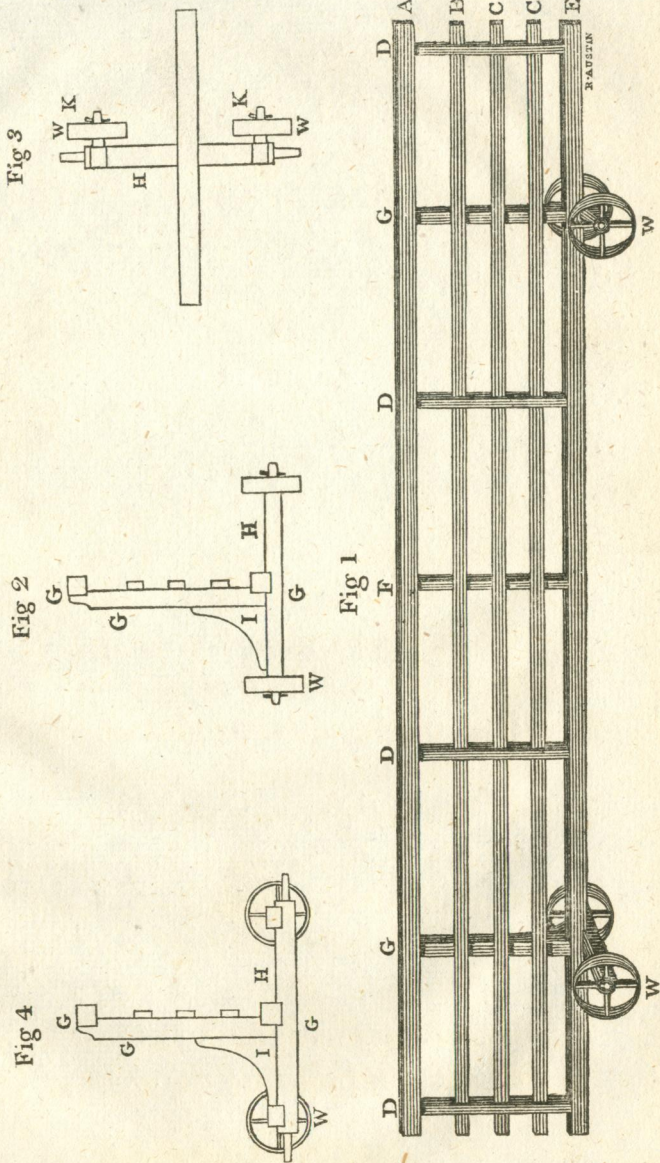
*Broome, Norfolk,
March 28, 1804.*

CHAS. TAYLOR, Esq.

DE-

Mr. Plowman's Improved Sheep Fold.

Pl. 1.



*DESCRIPTION of a SHEEPFOLD invented
by Mr. THOMAS PLOWMAN, of Broome,
in Norfolk, which one man may remove
with ease in five minutes, though large
enough to hold 300 Sheep.*

Fig. I. Twenty-one feet long, and three feet eleven inches high, composed of a top rail.

A, Three inches deep and two inches thick.

B, The upper bar, three inches deep, and three-quarters inch thick.

CC, The two lower bars, four inches by three-quarters of an inch, which, with the upper bar, are morticed through the uprights.

DDDD, Which uprights are oak, three inches by two inches.

E, The lower bar, three inches by three.

F, An upright bar, with the horizontal bars halved into it.

GG, Two oak uprights, three by two inches.

Fig. II. Shows the oak uprights G G.
H, The axletree, three inches by three,
and three feet between the
wheels.

I, An oak knee, which connects the
uprights G G with the axletree,
by means of two screws and
nuts.

Fig. III. A plan, in which the axle
H is shown with two arms K K
at right angles to H, which are
made to act as pivots to the
wheels, when intended to be
moved in a direction at right
angles to the bars.

Fig. IV. Is a view of the same parts
described in *Fig. 3.*

The wheels marked W, in all the
figures, are of cast iron, and cost 3s. 6d.
each.

SIR,

SIR,

IN answer to your favour of the 16th instant, I have the honour to inform you that, where the Fold is wanted to be used on very hilly ground, you must begin at the top, and work it down to the bottom, for the ease of removing it, and then draw it up again with a horse. This, however, I have never had occasion to do ; for the land with us is ploughed in a contrary direction, and we work the Fold in the same course as the ridges. By this mean, the inconvenience is avoided of crossing the furrows, and they are also a guide to keep the Fold in a strait direction.

With respect to the sheep getting under, I do not recollect that circumstance to have ever happened, nor do I conceive that any land, which is cultivated

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vated can be so uneven as to admit
of it.

I remain, SIR,
Your most obedient Servant,
THOMAS PLOWMAN.

Broome, May 26,
1804.

CHAS. TAYLOR, Esq.

Satisfactory Certificates accompanied
the above Papers ;—stating, that the
Sheepfold fully answers the purpose in-
tended ; and that it is a very valuable
improvement.

The

The GOLD MEDAL of the Society was this Session voted to JOHN CHRISTIAN CURWEN, Esq. M.P. of Workington-Hall, in Cumberland; for his Experiments in draining Land ; from whom the following Account and Certificates were received, and to which an Engraving on Wood and Description are annexed.

The Letter was accompanied with a Plan, which may be seen by application at the Society's Rooms.

DEAR SIR,

MUCH having been said, in the public Papers, relative to Draining, on the improved method of Mr. Elkington, I beg leave to offer you some observations respecting it, which have fallen under my notice, and which tend to prove it can be applied, with success only, in such parts of the kingdom,

dom, as have few, if any, interruption of the strata. In order to make myself intelligible, it may not be improper to explain what is meant by interruptions of the strata, or dykes and fissures, as they are denominated in mining countries. They are produced by the fracture or disunion of the strata, and consist most commonly of the broken fragments of each superior strata; and towards the surface are of sand, gravel, and stones, which seldom or never fail of affording considerable quantities of water. These dykes may be approached within a few feet, and afford no water, as will be seen in two instances in the plan sent you. No. 3 is a main drain, four feet deep, which passed within a few yards of A, an extreme wet place, and did not affect it. The person employed, supposed the water to be below him, and brought in a lower level No. 1, which likewise failed. No. 2 was then made still lower, but with no better success

success than No. 3, though with more advantage of level. As soon as it crossed the dyke, I C, but before the level was brought up, not being deeper than the main drain, it got a considerable feeder. This proved that an interruption in the strata prevented the water flowing into a drain, which was of a depth otherwise to have drawn it. Another example occurs in the same field, at letter B; which is a sunk fence, four feet below the surface of the adjoining field, which was extremely wet within a few yards of the sunk fence. A lower level was supposed necessary to drain this water, and it was obtained at the dotted line. No water of any consequence was got, till it was within a few yards of the sunk fence, when a prodigious feeder was cut, and the head of the drain was not so deep at the time as the sunk fence. Many instances to the same effect might be produced. In sinking shafts in places much troubled with

with water, it is endeavoured, if circumstances will permit, to get near a dyke, which serves as a barrier to the water; and if, in sinking, the dyke be not crossed, the water is kept clear off; but if otherwise, the water would be got at any depth, though not in such quantities as when near the surface. The spot of ground, to which I have alluded, has above a dozen dykes, which may be traced from the out-bursts of water. They run in a direction of South to North-West. I have made my drains East and West. In one or two places, I was obliged to run a drain South. This proceeds from an arm running from the dyke: but this seldom extends to any distance, and they gradually decrease till they end; and they rather make an interruption than a breakage of the strata, as the strata is the same on each side of it. In such a country, Mr. Elkington could draw no more water than what lay in the uninterrupted strata between any
two

two of these dykes. The method of making the drain is explained by the Wood Engraving. I had twenty years ago drained this ground with stone drains, from 20 inches to two feet; but their direction having been mostly from North to South, and not sufficiently deep, I had got little more than the day water. The feeder which I have now got, might be made applicable to many purposes. The drains are from two feet to nearly five feet deep. I have made 6000 yards in the last twelve months; the cutting from 14d. to 18d. per rod, filling 8d. ten and a half single cart-loads of stones, at 9d. each, making the cost 10s. per rod. The expense appears great; but fewer drains are required, and the work is effectually done. By reference to the plan, it will be seen that the direction of the drains not being able to draw the upper water, I was obliged to extend them. I would advise beginning at the highest level; for frequently that clears the whole, unless
some

some dykes intervene in a contrary direction. I believe that all springs and out-bursts of water proceed from dykes. The extent of these is various. Some may be traced for many miles, and their effects seen from the water that appears on the surface. Their origin is scarcely perceptible, and they thicken to many yards as they are approached. The strata on both sides have a more rapid rise or dip, and are of a closer and harder texture. If these observations appear to you worthy of attention, you may make what use you think proper of them. I by no means wish to detract from Mr. Elkington's merit: but it is not generally applicable; and in counties where the strata are much broken, Mr. Elkington's plan will be found to fail.

I am, dear Sir,

Your obedient Servant,

Feb. 3, 1804.

J. C. CURWEN.

Mr. CHARLES TAYLOR.

P.S. The highest drain is 120 feet above the level of No. 3.

A Cer-

A Certificate from Mr. William Hoodless, farming agent, accompanied this letter,—stating, that upwards of six thousand yards of Drains had been cut, and completely filled, on the farm of John Christian Curwen, Esq.;—that the first drains made according to that plan were done three years ago; and that they stand completely, and answer an admirable purpose.

REFERENCE *to the Wood Engraving, of the manner in which Mr. CURWEN'S Drains are made.*

The lowest part of the Drain below E E is twelve inches wide.

E E 4 4 are the two side stones of the Drain, nearly four inches thick, and nine inches high.

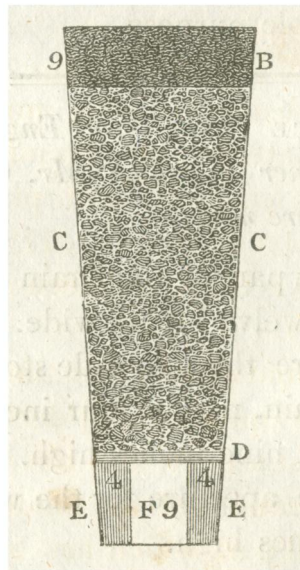
F 9 is the aperture for the water, nine inches high.

D, The flag or thin stone over the aperture, and which covers the side stones of the Drain.

G

C C,

- C C, The body of the Drain, filled with loose stones, till within nine inches of the surface.
- B 9, The top of the Drain, twenty-two inches wide, and nine inches deep, filled with grass sod and soil.



The

The SILVER MEDAL of the Society was this Session voted to JOHN HUTTON, Esq. of Marske, near Richmond, in Yorkshire, for his Plantations of Forest Trees ; from whom the following ACCOUNT and CERTIFICATES were received.

SIR,

I BEG leave to offer myself as a Candidate for the Premium, Class 24, having enclosed and planted, between the 1st of October, 1799, and the 1st of May, 1801, nineteen acres, with forest trees.

The ground upon which the plantation is made, is upon a rapid declivity, with a north-east aspect, and but ill adapted to the operations of the plough, excepting a small part which has been in tillage previous to 1799. This part, prior to that period, bore crops of turnips, and

has clearly demonstrated the great advantage resulting from the cultivation of the soil, by the great luxuriance of growth of the trees planted upon it.

On some parts the trees have not flourished, owing to a scantiness of soil on a lime-stone rock, and to the naturally bad quality of soil, which produces nothing but bent grass, rushes, and short ling; and to the very great exposure to the north-west and west winds. In both those places, however, the defects of the first planting have been, in some degree, remedied, by planting in those situations such trees as were judged to be the best adapted to the respective qualities of the soil of each; in the former mountain ash; in the latter, alder and birch, with some few cuttings of the common willow.

The lower part of the plantation, planted by Benjamin Idle, was filled up with trees of a much larger size than were planted on any other part of the
plantation,

plantation, and set at the distance of six feet from each other. They have not, however, thriven so well as the smaller ones; but are nevertheless alive, though making but slow progress.

The higher part of the land being much more exposed to the winds, I thought it advisable to plant it with considerably smaller trees, and at narrower intervals; and these trees clearly evince a superiority over the larger ones, by their more vigorous, healthy, and rapid growth.

The Certificates which I have herewith enclosed, will, I trust, give all the necessary information required.

I am, Sir,

Your obedient Servant,

JOHN HUTTON.

Marske, Jan. 25, 1804.

CHARLES TAYLOR, Esq.

THIS is to certify, that I planted, for John Hutton, Esq. of Marske, in the county of York, betwixt the 1st of October, 1799, and the 1st of April, 1801, five acres of land, with forest trees of the following description, viz. Oaks, 4236—Larch, 3059—Spruce Firs, 2607—Ashes, 3341—Beech, 575—Poplar and Birch, 424; and that they are at present in a healthy state, and properly secured by fences of stone and quickset hedges.

BENJAMIN IDLE, Gardener.

Marske, Jan. 25, 1804.

Signed in the presence of
FRANCIS RIDLEY, Churchwarden.

THIS

THIS is to certify, that I planted for John Hutton, Esq. of Marske, in the county of York, betwixt the 1st of October, 1799, and the 1st of April, 1801, fourteen acres of land, with trees of the following description, viz. Oak, 5400—Larch, 7300—Scotch Firs, 5700—Spruce Firs, 4500—Beech, 5200—Sycamore, 3500—Elms, 4500—Ashes, 5300—Birches, 1600—Alders, 2000—Mountain Ash, 2000—Silver Fir, 800 ; from one foot to two feet ; and that the plantation is at present in a healthy state ; and that the trees are properly fenced and secured from all depredations.

The method used by me in planting, was to take a sod out and invert it, and to put the trees in with a common setting-stick, as witness my hand,

THOMAS JACKSON.

Marske, Jan. 25, 1804.

Signed in the presence of
FRANCIS RIDLEY, Churchwarden.

The SILVER MEDAL and FIFTEEN GUINEAS were this Session voted to WILLIAM PEARCE, of Turf House, in the parish of Landewednack, near Helston, in Cornwall, for his unre-mitted industry in improving a quantity of Land, lying waste ; from whom the following COMMUNICATION and CERTIFICATES were received.

This Letter was accompanied with a PLAN, which may be seen, by application at the Society's Rooms.

SIR,

TO apologize, when pleading in the cause of humanity and industry, would be an insult to the members of a liberal institution ; I shall therefore only beg excuse for the style of my narration.

I yesterday took a walk of about two miles from this station, to satisfy myself

self respecting a remarkable instance of persevering and indefatigable industry, which I had heard of, and found as follows: Twelve acres of barren downs had been taken from the common, seven or eight of which were in a high state of cultivation, and the remainder in a very forward state of improvement. In order to vary, as needful, the different kinds of produce, this space was divided into eight different fields, which required seventeen fences, the greater part of which was made with stone, and put together in a masterly manner. But a great part of this industry is hid, for most of the downs being swampy ground, and some very shallow, in order to remove the first inconvenience, the different fields were obliged to be intersected with various drains, which empty themselves into the ditches that have been obliged to be dug round the margin of each field, both for this purpose, and in order to
give

give greater height to the fences. On each side of every bank ditches are dug, and in the gateways bridges are made, able to support a loaded cart, that the water may freely run off. The land produced, in 1803, ten Cornish bushels of barley, nine trusses of hay, two hogsheds of oats, and ten bushels of wheat, besides pasture for cattle. This has been the work of eighteen years time, by one indefatigable man, who began it in the fiftieth year of his age. I have to add, that his dwelling-house and out-buildings, including the turf walls, of which they are composed, the laying of the rafters, and the thatching, are all executed by himself, though he was only bred to husbandry.

His industry is surprising, as, independent of his great labour in procuring manure from a distance which has required his travelling two hundred miles, he brings coals for different persons, of whom I am one. The distance
from

from me is eleven miles. He has brought coals so far on my account eight times, since last July, which add 176 miles more.

The ground he is improving is the property of Sir Christopher Hawkins; and, though labouring under a natural infirmity in the hand, which obliges him to conduct the plough with one hand only, yet he continues indefatigable in his exertions.

I am, Sir,

Your most obedient Servant,

THOS. HUMPHRIES,

Lieut. Royal Navy.

*Lizard Signal Station, near Helston, in Cornwall,
Feb. 22, 1804.*

CHAS. TAYLOR, Esq.

SIR,

SIR,

I BEG leave to lay before the Society for the Encouragement of Arts, &c. the following narration, hoping that though the extent of my improvements is not great, yet they will not be considered undeserving their notice, as it has been to me a most arduous undertaking, and has required my unceasing and indefatigable labour, and which it still requires. For a part of my manure only, which consists of sea sand, I have to go two miles; and my average annual quantity being 50 load, for this one article I must of course travel 200 miles, independent of my labour in loading and procuring it. What other labour is unavoidably necessary, in order to carry on the series of husbandry, needs no comment from me to your Society. I chiefly rest on my labour, for now upwards of eighteen years in
this

this particular branch of agriculture, to recommend me to your Society, and as having added my mite towards the improvement of waste grounds. The manner of my proceeding I shall endeavour to make as plain as possible, for the information of others. I was induced to this undertaking from a great love of husbandry, a wish to serve my family, and a desire to employ myself in that part of agriculture, which I thought the most useful to my country, and beneficial to mankind.

I still find the same strong propensity in my mind : but my corporeal abilities fail me, being in my sixty-eighth year. If I could have kept a man all this time, I suppose I should have been able to have made four times the improvement I have, as the odds of an additional hand to one need not be mentioned to your Society. But, on the contrary, when I began, and for some years after, this, to me, arduous undertaking, I was obliged

liged to work for others five days out of the week, to obtain food for myself, a wife, and seven children, viz. six sons and one daughter; the former of which, as soon as able, went into the service of their country, in which two are now employed, and two lost their lives last war.

As to property, when I first began this undertaking, I had none, except one mare, and the shilling per day I earned by my labour, at which I used to work hard, in order to finish it as soon as possible; not to leave off work, but to go to still harder, that of my own undertaking in improvement.

The manner I proceeded in clearing the land, which was chiefly swamp, and produced what in general grows on those kind of commons, was as follows: the surface for the most part was less than six inches, under which was a bed of loose stones of various sizes, from half a pound to three cwt. or thereabouts,
but

but the latter generally appeared above the surface. To clear away these, was certainly a work of great trouble; but still it assisted me in another respect, and on this account it was so far an advantage: for on removing these stones from their natural bed, they were carried to places in which they might be handy to face my banks, the extent and labour of which will be seen by the imperfect, though nearly correct, plan which accompanies this narrative, as I thought it might tend to throw more light on the subject, than my still more imperfect narrative. My method was first to enclose in part; to do which I was obliged to collect materials, that is, turfs and stones, as I could procure them; which cost me great labour. After which, when I came to clear away to improve the grounds, the stones, as before mentioned, did, by being used as I have said, separate my *extreme* enclosures, and divide the grounds into different

ferent departments, and assisted me in the two grand objects of clearing the ground and making the banks. As the plan is too small to give it in scale, it may be necessary here to mention, that the banks are between five and six feet high, and four feet broad, as I built them to be durable, and though not exactly so, still very nearly in as straight lines as drawn in the plan, having made them so, because for a variety of reasons they are more convenient.

In the spring, as the land became dry, I began to cut up the surface of the ground, exactly the same as turfs for fuel; which, being placed upright, with their upper ends touching, were left in this manner to dry. As soon as this was accomplished, they were placed in piles loosely together, and burnt. I then proceeded to clear under the surface the loose stones as mentioned; which on being removed, as before related, I came to a strata of rather light,
loose

loose clay (there are some exceptions to this of not so good a bottom), among which at times stones were likewise found. For this reason it became necessary first to break all this ground up by hand, not being able to use the plough, which, when done to a convenient depth to answer the purposes of tillage, was manured with the before-mentioned burnt materials, to which at times something more was added. The corn was then sown, and turned in with the plough, wheat, oats, and barley in succession, with the latter of which grass-seed was sown. It was then suffered to lie fallow for three or four years, at the end of which time it was managed by the common methods of ploughing, harrowing, and manuring. This latter requires great labour, for the reasons above mentioned, before it is brought into a proper state for tillage. After this, a regular succession of different kinds of grain, fit to keep the ground in the best

state for cultivation, is carried on. After having improved as much as required my more immediate attendance, and the produce of which tended greatly towards the support of my family, I began to erect a dwelling on the spot, the walls of which are composed of turfs, the roof rafted and thatched by myself; to which has been added, as I was able, barn, stable, cart-house, and other convenient out-houses for my cattle, &c. which at present consists of three horses, and one cow rising five years, two heifers rising three and four years, two steers rising two years, and one yearling. To which may be added, as another part of my small stock, a few bushels of different kinds of grain, and a small quantity of hay, plough, harrow, cart, slide, wheel-barrows, &c. &c. of tools necessary for husband ry.

For the more particularly understanding the extent and nature of my enclosures, with the various kinds of tillage they

they are applied to at present, I hope the plan I have sent, though imperfect, will be found sufficient. I have effected the whole improvement by my industry ; as, when I began it, I was worth no more than the mare before mentioned, and the shilling I had earned on the first day of my operations. I have a large swelling on my hand, which I was born with, and which extends from the middle joints of the fingers on the left hand to nearly the elbow. Though this has not rendered my hand quite useless, yet it is so in a great degree, as I cannot use my fingers to take off my clothes, but am obliged to be assisted ; and within these last few years it gets worse ; but still, thank God, it is of use to me in my more laborious calling.

I am, Sir, your obedient Servant,

WM. PEARCE.

C. TAYLOR, Esq.

THESE are to certify, that we verily believe the above to be a true statement, most of it coming under our own knowledge.

JAMES KEMPTHORNE, R. N.

THOMAS HUMPHRIS,

Lieutenant Royal Navy.

Landewednack, March 13, 1804.

The

The THANKS of the Society were this Session presented to Mr. CHARLES WAISTELL, of High Holborn, for his useful Communication on the CONSTRUCTION of FIELD GATES, of his invention.

The following ACCOUNT was received from him, and an ENGRAVING on WOOD and DESCRIPTION are annexed,

DEAR SIR,

THE various methods used in bracing common gates for fields, prove that not one of them is greatly superior to the rest; for, if it was, that method would have been generally adopted. Most gates are loaded with superfluous timber in some of their parts, and are constructed upon such bad principles, that they are frequently broken by their own weight, aided by

H 3

the

the concussion of the head against the falling-post; and this, long before any part of the wood has begun to decay. I have for some time given this subject considerable attention, being impressed with the idea, that if common gates could be constructed with less timber, and upon better principles, the saving of timber only would be of national importance; for we have many millions of gates to uphold in Britain, and their numbers are annually increasing. The result of my labours has been the plan which accompanies this letter. Gates made according to it, possess great strength, are very light, and of easy and simple construction. Although uniformity of appearance be not essential in a common gate, yet it is worth having when it can be obtained, as in this gate, without additional expense.

My Gate is made with short, and consequently less valuable, oak or ash timber, than those of the commonest
con-

construction; its strength is much greater than any other gate made with a like quantity of timber, there being at four distant points between the head and the heel, two bars and a brace crossing each other: and I doubt not that it will be found proportionably more durable: it is, besides, very easy to construct, and requires less labour than most other common gates. Twenty-nine years ago I designed plans for ornamental gates, with semi-oval and semi-circular braces, and had them executed; the plans were sent to my friends in various distant parts of this kingdom, as also to Ireland; and I have the pleasure to observe, that they are become almost the only ornamental gate in many parts of England. The plans of them I never published, although they were prepared for engraving fifteen years ago; and I should be as indifferent about my present design, of a common field gate, if I did not

conceive that its publication would materially benefit the public; the introduction of this form being, I conceive, of some national importance, as timber has been lately greatly enhanced in price, and is rapidly on the advance.

This Gate was designed for the approach to a country residence; but for common purposes, the wicket on one hand, and the short length of rails on the other, may be omitted. I shall thank you, if you will have the goodness to lay my plan before your respectable Society, of which I have, for many years, had the honour to be a member. And should this plan be approved of, I may probably furnish some designs for Park Gates on an improved construction.

I am, dear Sir,
Your very humble Servant,
CHARLES WAISTELL.

March 22, 1803.

MR. CHARLES TAYLOR.

REFERENCE

REFERENCE *to the* ENGRAVING *of Mr.*
WAISTELL'S GATE.

DIMENSIONS.

The heel of the gate to be about	$3\frac{1}{2}$	inches square.
The head of ditto	$2\frac{1}{2}$	by 3 inches.
The top rail or bar	$3\frac{1}{2}$	by $1\frac{1}{2}$ inches.
The bottom bar	$3\frac{1}{2}$	by $1\frac{1}{4}$ inches.
The bar in the middle of the gate	3	by $1\frac{1}{4}$ inches.
The other bars, and the 4 braces	$2\frac{1}{2}$	by $1\frac{1}{4}$ inches.

Observations on its Construction.

The head and heel of the gate may be of oak, and the bars and braces of fir. Narrow and thick bars, when braced as in this design, are stronger than broad and thin ones, containing the same quantity of timber, and they also oppose a less surface to the wind. The two points in the heel of the gate, to which the thimbles are fastened, may be considered as firm or fixed points. From these points, viz. 1 and 2, two braces to proceed to 4 and 3, in the
middle

middle of the bottom and top bars, and being there secured, these become fixed points, and from these two points, viz. 4 and 3, two braces proceed to 5 and 6, fixing those points. The gate is thus doubly braced, viz. from the top of the heel to the top of the head, by means of the braces 1, 4, and 4, 5; and from the bottom of the heel to the bottom of the head, by means of the braces 2, 3, and 3, 6. On each side of the gate are two braces, and those parallel to each other. The brace proceeding from the bottom of the heel of the gate, and that which is parallel to it, as also the bottom bar, are all strained in the way of compression, and the brace proceeding from the top of the heel, and the other brace which is parallel to it, and also the top bar, are all strained in the way of extension. The strains in this Gate being none of them transverse, but all longitudinal, it would support a vast weight at its head without having its
form

form altered. The braces all serve the double purpose of keeping the gate in its true form, and of shortening the bearings of the bars, and strengthening them. Few gates have less timber in their braces; and perhaps in no other way can a gate be so firmly braced with so small a quantity of timber.

At 3, 4, 7, and 8, two braces and a bar of the gate are firmly screwed together by means of iron pins and screw nuts. At the other points, where only one brace crosses a bar, common gate-nails are used.

If, in some cases, a strong top-bar be wanted, to resist the pressure of heavy cattle, a bar or board, about six inches broad, and one inch thick, may be laid with its broad side upon the top bar, and fixed thereto by means of the ends of the braces in the middle, and by the heel and head of the gate at the two ends of it. This board will, in this position, resist exactly the same pressure
as

as a thick top bar, three inches broad, by four inches deep, although it contain no more than half the timber.

In the ground plan, or horizontal section, *Fig. 7* represents a piece of wood, about four inches cube, pinned to the falling post, a little below the catch, to stop the gate from swinging beyond the post: another stop near the ground may be useful.

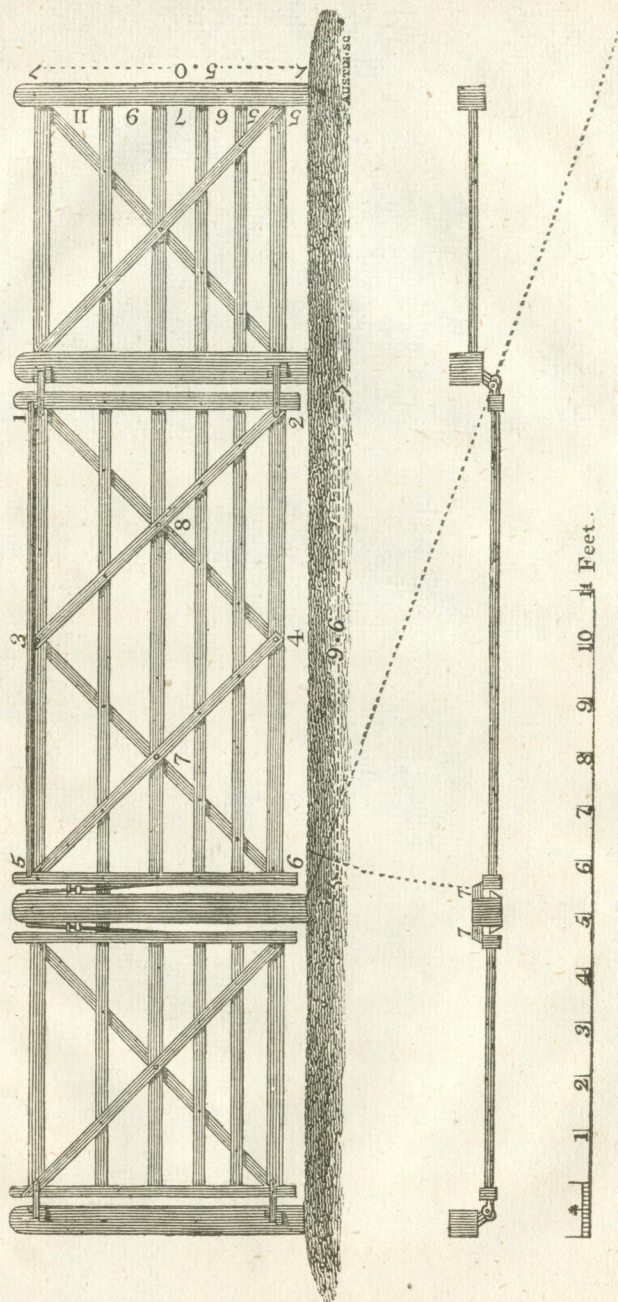
When gates are hung to open one way only, their heels and heads generally rest against the hanging and falling posts; but when they are hung according to this design, gates may be made about one foot shorter for the same opening, and consequently they must be lighter, stronger, and less expensive.

Of the hanging of Gates.

When the two hooks in the hanging-post are placed in the same perpendicular

Mr. Waistell's Improved Field Gate.

Pl. 2.



cular line, a gate, like a door, will rest in any direction in which it may be placed. But, in order that a gate may shut itself when thrown open, the hooks are not placed exactly perpendicular; the upper hook declining a little towards the falling-post, or a few feet beyond it. In whatever direction that hook declines the farthest, in the same direction will the gate rest, if unobstructed, and its head cannot then sink any lower. Make the head describe half a circle, and it will thus have attained its utmost elevation, and will be equally inclined to descend either to the right or to the left*.

The following method of fixing the hooks and thimbles, will, I think, be found to answer very well for a gate that is intended to open only one way.

* See Chap. ii. of Mr. Parker's Essay on the Hanging of Gates; and also the Agricultural Report for Northumberland, by Messrs. Bailey and Culley.

Supposing

Supposing the face of the hanging-post to be set perpendicular, and the upper hook driven in near its inner angle, as is represented in the preceding design, and that the lower hook must be four feet and a half below it; suspend a plumb-line from the upper hook, and at four feet and a half mark the post; then at one inch and a half farther from the gateway than this mark, drive in the lower hook; this hook must project about half an inch farther from the face of the post than the upper hook. In the section or ground-plan of the gate, the two white circles near the hanging-post represent the places of the two hooks when brought to the same horizontal line; that nearest the gateway represents the place of the upper hook. A line drawn through the middle of these two circles, and extended each way, will, on one hand, represent the gate's natural line of rest, and, on the other, the line of its highest elevation.

A gate

A gate thus hung will, when thrown open nearly to the line of its highest elevation, return to the falling-post with a velocity sufficient to resist a moderately strong wind. This velocity will be either increased or diminished, accordingly as the upper hook declines more or less from a position perpendicular to the lower hook. In order to adapt the thimbles to these hooks ;—as the lower hook is one inch and a half farther from the gateway than the upper hook, the lower thimble must have its eye an inch and a half farther from the heel of the gate than the eye of the upper thimble, in order that the bars of the gate may be in a horizontal position when it is shut. And, as the upper hook projects half an inch less from the hanging-post than the lower hook, the upper thimble should be fixed half an inch nearer the farther side of the heel of the gate than the lower thimble, in order that the gate may be in a perpendicular

pendicular position when shut. If the thimbles have straps embracing the heel of the gate, and proceeding a few inches along each side of the bottom and top bars, and if they are fixed to the heel bars and braces, by means of iron pins and screw nuts, great firmness will be given to the gate at those two points, which are those that suffer the greatest strains.

THIS

THIS is to certify, that I have constructed several Field Gates, after Mr. Waistell's plan. I approve of them beyond those after any other plan, and find them to answer well in use. All the field gates I have had made, these three or four years, have been after his plan. They take less timber, are less expensive, and are stronger and more durable than those made in the common way.

EDWARD SIMPSON,
Master of the Academy
at Woden Croft Lodge,
near Barnard-Castle.

July 20, 1803.

I

SIR,

SIR,

I WAS favoured with your plan of a Gate some time ago, and, upon requesting your permission to insert it amongst the other collections preparing for a new edition of my pamphlet, I was informed by Mr. Kendal, that you proposed for it to appear, in the first instance, in the Reports of the Society for the Encouragement of Arts, &c. and mentioned, I think, the present month for its publication. I shall be very much obliged to you, if you can put me in the way of procuring a sight of your communication to that Society: and I have farther to request, that you would favour us with your wishes respecting the period, say two months or three months hence, at which I may consider myself at liberty to introduce your Gate amongst others in my pamphlet. I have completed four quarto
plates

plates, which are already engraved, and I shall add about two more. I was not at first aware that your pattern would have attracted my attention so much as it has done ; but I find it extremely applicable to *cast metal hinges*, for which I have just sent the patterns to Birmingham ; and I shall be very glad to forward a set of them to you, if you should think them worth your acceptance.

I am, SIR,
Your obedient Servant,
THOMAS N. PARKER.

*Hatton Grange, near Shighall,
29th May, 1803.*

MR. WAISTELL,
No. 99, High Holborn.

The Thanks of the Society were this Session ordered to J. C. CURWEN, Esq. of Workington Hall, in Cumberland, for the present of a Model of his Machine for CLEANSING POTATOES, which is also applicable for washing Linen.

The following Communication was received from him, and the Model is preserved for public inspection in the Repository of the Society.

SIR,

IN order to elucidate more fully the advantages of feeding cattle with steamed potatoes, and to explain more clearly the manner of washing potatoes, I shall send to the Society a model of the machine I use for that purpose, and request the Society will accept it.

The

The following fact will confirm the plan I recommended to the Society last year, which was published in the 21st Volume of their Transactions, with explanatory Engravings. One farmer, who kept between fifty and sixty horses for my works, had a farm under me of four hundred acres, at £280 per ann.

Two years ago, when I first began with my potatoe-feed, he refused to pay the poor-rates, alledging his farm was too dear. Having prepared stabling, I gave him notice to quit his farm; and now within this week I have let it to him again, taking away two hundred acres, which were most commodious for the town, and reducing his rent £30 per annum, he now paying £250; and all I have to do, is to erect him an apparatus for steaming potatoes.

What I have taken from him, will bring me £300 per annum. The advantage of my plan will scarce be doubted, upon this statement. The im-

provement in the condition of my horses, since I began with the potatoe-feed, which is about three weeks, is astonishing. The potatoe-washer, I confidently trust, will be found of more general utility than I had any conception of, when I first constructed it. In the first which I made, brushes were attached to the barrel and the axle-trees, after it had been in use two years, washing for seven months in each year from 140 to 180 stones of potatoes *per diem*, each stone; and upon examination of it a few days ago, I was surprised to find the brushes scarce the worse for wear; this convinced me they had no share in the operation, and proved that the potatoes were washed solely by rolling over each other, and falling into the water.

Impressed with this notion, I conceived that the flanges attached to the axle-trees of washing-machines, and which are represented as doing so much mischief to linen in washing, as to prevent

went them from being in general use, might be of as little utility in that operation as I had found my brushes. I lost no time in making the experiment, and had the satisfaction of finding it to answer completely, as the washing was perfectly effected without danger of injuring the clothes. I wish to record this through the medium of your patriotic Institution, to prevent any patent upon this plan.

I have the honour to be,

SIR,

Your obedient Servant,

J. C. CURWEN.

* * * For the Drawings, and farther information on the Potatoe-Washer, see pages 203 and 206 of the 21st Vol. of the Society's Transactions.

The SILVER MEDAL of the Society was this Session voted to Mr. WILLIAM WATSON, of North Middleton, near Belford, in Northumberland, for the comparative CULTURE of TURNIPS, from whom the following COMMUNICATION and CERTIFICATES were received.

SIR,

HAVING been long, and pretty extensively employed in Agriculture, in a district where the turnip husbandry is much practised, and being satisfied that when the soil is proper, and the management judicious, great crops of that invaluable root are the most profitable means of obtaining luxuriant and productive crops of corn, &c. and of laying a solid foundation for future abundance in the increasing quantity of manure, I have paid particular attention

tention to the different modes pursued in its cultivation. It is with great pleasure, therefore, that in the list of premiums offered by the Society instituted at London for the Encouragement of Arts, &c.—a Society whose patriotic and laudable exertions deserve the most warm and grateful thanks of every real friend to the British empire,—I observe one for the best set of experiments made with a view of ascertaining the most advantageous of these modes; and, having made a comparative trial with great accuracy, I beg leave to request that you will do me the honour of laying this paper, which contains an account of it, before the Society. That there are situations in this kingdom in which eight acres of land may be found of an *uniform* quality, I do not doubt. I must, however, remark, that I never found that number of acres contiguous to each other, or properly situated, for an accurate comparative

parative experiment, in the fallow land of any farm in which I have been concerned, *so precisely similar in soil and condition*, as to induce me to think that I could have exhibited the result of so extensive an experiment as irrefragable evidence of the superiority of any particular mode of culture. Besides, I could not have attended either to the minute mixing of the necessary quantity of dung for eight acres of ground, *so as to have rendered it of an uniform quality*, nor to the weighing of *all* the turnips upon that quantity of land, without which, (when I adverted to the difference of weight occasioned even by a scarcely perceptible difference in the diameters of similiar solids) I could not have totally divested myself of some doubts as to the accuracy of the result.

For these reasons, I could not *satisfactorily* conduct the experiment on so large a scale as that proposed by the Society ; and though I am thereby prevented

vented from becoming a candidate for the Medal,—a reward by which I should have considered myself highly honoured,—yet I hope this Communication will not be deemed altogether unimportant; and that it will, in some degree, forward the views of so distinguished a body.

Every part of the ground upon which this experiment was made, had been managed for a series of years, in exactly the same manner. After being three years in grass, it produced a crop of oats in 1802; in the autumn of which year it was once ploughed. In May and June following, it received three furrows in the common way, and was completely pulverized and cleaned; after which it was divided into four flat ridges, about eight yards broad, each ridge containing precisely 4719 square feet. The soil is a dry, light, sandy loam, mixed with small hard stones, incumbent on a thick substratum of gravel;

gravel; and the four ridges were so much alike in soil and condition, that I think I may assert, that the most accurate chemical operator could not have proved the smallest difference in these respects. On the 22d of June last, the ridge, No. 1, was manured with dung; immediately after which, the manure was regularly spread over it, and ploughed in. The whole ridge then received a single working, with a light short-tired harrow; and *while the moisture was fresh*, the turnip-seed was sown with a machine, in rows, upon a flat surface with thirteen inches intervals. About the same hour, the ridge, No. 2, was prepared and formed into small ridges, or drills, upon which the turnip-seed was deposited in rows, with a machine, twenty-six inches from each other. *The dung in about one third of the raised drills on this ridge was partly left without being completely covered in.*

Early

Early the next morning, the ridge, No. 3, was also formed into small ridges, or drills, with intervals of twenty-six inches. On the tops of these ridges, a proper machine quickly deposited the turnip-seed in single rows, precisely in the same mode as that pursued in No. 2. On this ridge, however, No. 3, *every atom* of the dung was carefully covered with the plough. Immediately after No. 3 was finished, No. 4 was dunged and sown with turnip-seed, in the usual manner, in the broad-cast method.—Every part of the four ridges was manured with dung of the same quality. It was not *thoroughly* rotten, but had arrived at a more advanced stage of putrefaction than that used by farmers in general; and, in order that its quality might be uniform, it was carefully taken from *one* part of the fold-yard, and well turned over, and mixed in the field.*

* Dung was the only manure applied.

An equal quantity was applied to each ridge, at the rate of fifteen two-horse cart-loads* per acre. The turnip-seed was likewise of the same quality and kind, and was sown on each ridge at the rate of about one pound and a half per acre. The succeeding weather was remarkably dry, and unfavourable for the growth of the turnips, only one light shower having fallen, from the time the seed was committed to the ground, to the 16th of September following.—Notwithstanding this, however, the whole of the four ridges planted exceedingly well, though not so early as I could have wished; and their progress into the rough leaf, as well as their appearance for some time afterwards, was propitious. From the extreme severity of the drought, however, and the natural dryness of the land, many of the plants

* The cart was five feet three inches long, three feet three inches broad, and one foot six inches high, in the inside.

in every ridge were killed. No. 1 lost the greatest quantity; No. 2 the next, *espécially on those drills where the dung was not all completely covered in*; and No. 4 scarcely so many as No. 3.—Throughout the whole crop, vegetation seemed extremely languid, and the turnips were generally of a small size; the largest were produced on Nos. 2 and 3, *in the drills with intervals of 26 inches*. These intervals were twice horse-hoed, and their adjoining rows of plants were as often cleaned with the hand-hoe. In these rows the plants were left about eleven inches asunder. Numbers 1 and 4, in which the plants were set out at about twelve inches from each other, were thrice hand-hoed with great accuracy. The several operations of ploughing, sowing, and hoeing, were performed in the same kind of weather on each ridge. I attended the whole of them myself, and can safely say that the utmost precision and impartiality were observed.

observed. The four ridges were carefully surrounded with proper rails to prevent damage, and no depredations of any kind were committed.* On the first of this month, *all* the turnips which were produced on these ridges were drawn up, and carefully and exactly weighed, after their tops and tap, or fibrous roots, had been cut off. The produce of each ridge was as under:—

No. 1, drilled on a flat surface, <i>stones. lbs. lbs.</i>			
with intervals of 13 inches	144	10—14	to the stone.
No. 2, drilled on small ridges,			
with intervals of 26 inches,			
and with a part of the dung			
not perfectly covered in	193	5—	ditto.
No. 3, drilled on small ridges,			
with intervals of 26 inches,			
and all the dung well covered in	-	-	-
	211	4—	ditto.
No. 4, broad cast	-	-	-
	168	12—	ditto.

* Except that a mole destroyed a few plants on three drills on No. 1.

Remarks

*Remarks on the different Modes of Cul-
ture.*

No. 1.

IN this method of management the dung is applied in a manner exactly similar to that practised in the broadcast husbandry ; and experienced agriculturists well know, that *even after it has been thoroughly putrefied*, it cannot be *wholly* covered by the earth in the mode of ploughing, pursued under that system of cultivation. In almost all cases, the harrows are used to produce an even surface after the last ploughing, and immediately before the seed is committed to the ground. By this operation more of the dung is left upon the surface ; and when it is considered that much of it is applied in a long or half-rotten state, it will readily be conceived, that a still greater quantity will be left exposed on the surface of the ground ;

in which situation it can conduce but little, if any thing, to increase its fertility.

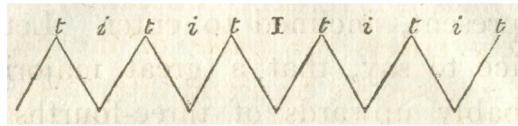
Under this mode of management, the plants may be left at more regular distances in hoeing than in the broad-cast method ; but I am *now* inclined to dispute that that operation can be performed at an expense materially, if at all, less than among those obtained in the latter way. The plants are generally left in the rows at about twelve inches apart, so that an acre will produce about 40,200 turnips, when the crop is a full one.

Nos. 2 and 3.

Some practical agriculturists, as well as chemical philosophers, have contended, that dung should be *thoroughly* putrefied before it be applied to the soil ; and others maintain, that it is
more

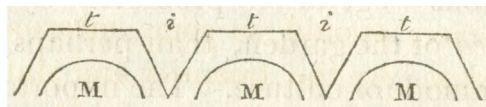
more beneficial to apply it in a half-rotten state. Into this dispute, I am not, at present, inclined to enter. Let it suffice to say, that a great majority, probably upwards of three-fourths of the farmers, in almost all the extensive turnip districts in the kingdom, apply it either in the latter state, or before it has arrived at a much more forward stage of putrefaction; and if rotten dung (thoroughly putrefied) cannot be *wholly* covered in this common mode of ploughing, it is obvious, as I have before remarked, that, in the other state, a still greater part must be rendered nearly useless by exposure to the solar rays, &c. In the management now under consideration, however, every atom of it may be buried, if the spreaders and ploughmen are attentive. That management is as follows: As soon as the land has been properly pulverized and cleaned, a double-mould board plough,

drawn by two horses, is used to raise small ridges in this form :



i, i, i, being intervals of twenty-six inches, and *t, t, t*, the tops, of about an inch or two broad. All the drills should be equal in size. The height is generally from about 12 to 15 inches: this, however, should in some measure be regulated by the quantity and state of the dung. Immediately after the small ridges or drills are formed, a man with a cart, drawn by one or two horses, lays a sufficient quantity of dung for three or five drills (in small heaps), in the interval *I*, while the wheels of the cart run in the adjoining spaces, *i, i*. In this manner all the other intervals are manured. As soon as the dung is carefully spread in the bottoms of the intervals, another double-mould board plough
(also

(also drawn by two horses moving in the intervals), splits the ridges along the lines *t, t, t*. This operation completely covers the *whole* of the dung, and reverses the tops and intervals. A roller about ten inches diameter, and four feet in length, drawn by one horse, is now moved along the ridges. It covers two at a time, which are thereby reduced to this form:—



The tops *t, t, t*, are generally about ten or twelve inches broad, in the middle of which the turnip-seed is deposited, in a rut made by the coulter of the sowing machine, which is fastened to the hinder part of the above roller by a cord about nine feet long; the distance between *t, t, t*, or each row of turnip-seed, being twenty-six inches; and if the ploughing and spreading have been properly performed, the dung will be

nearly in the position, M, M, M. Thus the agriculturist is not subject to the waste of any part of his manure, and reaps the superior benefit of having the turnip-seed regularly sown, in a rut of a proper depth, penetrating nearly to the dung in the middle of the small ridges; —a method which seems better calculated to give to the cultivator of the field advantages similar to the rapid and vigorous vegetation promoted by the *hot-bed* of the garden, than perhaps any other mode of culture. The importance of having *all* the dung perfectly covered, is evinced by the result of the above experiment; for, with the exception of a small part of it, in a few drills on No. 2, not being perfectly covered with the soil, there was no difference *whatever* between the management of that ridge and the mode pursued on No. 3. In dry weather, the roller is moved twice along each ridge, first to compress the soil, and next to
close

close the rut made by the coulter of the sowing machine, to secure the turnip-seed from depredation and drought: but if the soil be so moist as to stick to the roller, it is moved only once along each drill; and some able husbandmen are of opinion, that this is the most advantageous mode *in any state of the soil*; that without the second rolling, the turnip-seed will vegetate regularly; and that, while young and tender, the plants will be beneficially sheltered by the rut of the sowing-machine in adverse weather. Some cultivators form the drills, or small ridges, with a common single plough, and in many situations they are made more straight and neat than with the double plough. With the latter, however, they may, in most situations, be sufficiently well formed, at about half of the expense incurred by using the single plough, *which does not cover the dung better than the other*.—The skuffler, an implement with three

or five hoes, is sometimes used to clean the intervals. Some, however, prefer using two small ploughs of the common form, four or five inches broad at the bottom, and fastened together by screws, which increase or diminish their distance from each other, according to the breadth of the intervals. This implement is drawn by one horse, and, by being moved *once* along each interval, cuts a proper quantity of earth from each side of the row of plants; and by proceeding in this manner, a ridge of earth is laid up in the middle of each interval. This mode is the best in situations where the drills are not perfectly straight. Where they are *quite* straight, an implement is used, which, instead of moving the earth from each side of one drill, cuts it off the inner sides of two drills; and in either method the hoeing of the intervals may be performed with equal expedition. A few weeks after these small ridges are formed
in

in the middle of the intervals, they are generally split by a double plough drawn by one horse, the earth being laid close against the turnips on each side. These operations not only destroy the weeds in the intervals, but give to that part of the land the advantages of a bare fallowing, and, besides being *greatly* cheaper, are much more fertilizing than hand-hoeing. In this mode of cultivation the turnips attain a greater size than under the broad-cast method, or that with narrow intervals; and though the plants are generally left at about eleven inches apart in the rows, which reduces the number on an acre, when the crop is a full one, to about 21,900, the result of the above experiment will not be surprising, when it is considered, that from the properties of similar solids, the weights of well-formed (spherical) turnips are in the ratio of the cubes of their diameters, and consequently that one of eight inches and a half

half diameter will weigh nearly as much as three of six inches diameter each.— Nearly all the farmers in this district use their utmost endeavours to obtain turnips of a large size, which, together with the other important advantages derived from it, has long induced them to prefer drilling on small ridges, with broad intervals, to any other mode of culture; and within the last twenty years, it has become the almost universal practice in the counties of Northumberland, Roxburgh, Berwick, and East Lothian,—an extensive and extremely well managed district; in which, I believe, the rents of land are considerably higher than in any other in this kingdom. In several, the drills are not drawn at right angles to the ridges (I mean the common ridges of the field), but in a diagonal direction; it having been found, that the seed-furrow in the succeeding spring, together with the effects of common harrowing, not only
reduces

reduces the land to an *even* surface, but that after such management, the crops of corn are *uniformly* luxuriant and productive, the manured parts being, in these operations, well mixed with the soil in the intervals. I am satisfied, from my own practice, and pretty accurate observation on that of others, that with *considerably less* manure, as weighty a crop of turnips may be obtained by this method of cultivation, as by that with narrow intervals, or in the broad-cast husbandry ; and, as it is generally difficult to raise as much dung as will manure the whole of the fallow land, at the rate of fourteen to sixteen loads an acre, this, *in promoting the growth of more extensively luxuriant crops, and increasing the quantity of manure for those which succeed*, is an invaluable advantage. Besides, in unpropitious seasons, when, under the broad-cast and narrow drill system, a judicious agriculturist would not cultivate turnips on
land

land he has not been enabled *thoroughly* to pulverize and clean, he would venture to raise them where the spaces between the rows are sufficiently broad for the admission of the horse and the plough, under an idea that before their tops covered the intervals, (which they generally do about the beginning of October) his ground could be brought into a proper state.—You will no doubt remark, that the crop I obtained even on No. 3, was but scanty; and conceive, however, notwithstanding that circumstance, that the experiment satisfactorily shows the superiority of the mode of management pursued on that ridge.—By the same mode, I obtained a crop on the land surrounding that on which the experiment was made, which, considering the extreme dryness of the summer, and that it was sown at the same late period of the season as that upon the experiment ground, may be reckoned a very productive one; and, as the
soil

soil was not superior in quality, it may be of some consequence to endeavour to account for this difference. The land marked out for the experiment, contained some couch and other weeds, which I wished to eradicate ; it therefore received a common ploughing *only a few days previous to the seed being committed to the ground*. The surrounding land had lain for a much longer time between the last ploughing and the seed-furrow, and contained more moisture at the time of sowing them than the other ; and though this, in a humid season, would not have caused a material difference in the crops ; yet, in a summer so extremely dry as the last, it was attended with important advantages. To these I may add others ; for dung having last year been unusually plentiful, it was manured with about *twenty* loads an acre, and with dung in a very *moist* state ; whereas, that applied to the land on which the experiment

ment was made, lost a considerable portion of its moisture by evaporation, during the time of mixing *well*, for the purpose of rendering *all* parts of it equal in quality.—Perhaps it may not be deemed unimportant to state, that the prevailing opinion is, that *very dry seasons are more unfavourable to the turnips raised on the small ridges (drills) than to those produced on land with a flat surface.*

No. 4.

The same objections which have been urged against the manner of applying on No. 1. may be advanced against the mode of cultivation pursued on this ridge, under which the plants cannot be left with such precision and regularity as in the drill husbandry.

Expense

Expense of each mode of Culture.

The management pursued on Nos. 1 and 4, is less expensive *up to the time the plants become fit for hoeing*, than that pursued on Nos. 2 and 3. This saving of expense, however, is overbalanced by the cheapness of hoeing under the latter mode, and by the advantages derived from that operation being performed before the plants become too large. The general expense of hoeing broad-cast turnips, in this quarter, is about seven to ten shillings per acre, of 4840 square yards. Those in drills, with narrow intervals, will cost as much; and when it is considered; that an acre of these contains twice as many rows as the same quantity of ground under the broad intervals, and that these intervals are quickly and efficaciously hoed with the horse and plough, it will be readily conceived that the latter mode is the least expensive *upon the whole.*

whole. As the turnips under this experiment did not grow uniformly, some parts were much sooner fit for hoeing than others. The person that hoed them was sometimes not employed among them above an hour in the day; which prevents my furnishing an accurate account of the expense of hoeing each ridge.

So easy is the operation of hand-hoeing the small ridges or drills with broad intervals, that, in this quarter, it is nearly all performed by women, boys, and girls. If we depended on men, as the farmers do in some other districts, we could not *perfectly* hoe much more than one third of our turnip crops.

I am, Sir,

Your most obedient Servant,

W. WATSON.

*North Middleton, near Wooler,
by Belford, Northumberland,
Feb. 18th, 1804.*

CHAS. TAYLOR, Esq.

Certificates

Certificates from Mr. Adam Rutherford and Mr. J. Barbearn confirmed the above statement, and the accuracy of Mr. Watson's Experiments.

THE GOLD MEDAL, or THIRTY GUINEAS, at the option of the Candidate, was this Session adjudged to Mr. JOHN SHIRREFF, of Captain Head, near Haddington, in North Britain, for preserving TURNIPS in winter.

The following ACCOUNTS and CERTIFICATES were received from him, and the pecuniary Reward paid to him, at his desire.

SIR,

OBSERVING that the Society for the Encouragement of Arts, &c. offer a reward for preserving turnips; and having been in the use of drawing and stacking the whole, or the greatest part of my turnip crop for several years past, in autumn, for consumption during the following winter and spring; and having found the practice attended with much convenience, economy,

mony, and emolument, I have taken the liberty to submit my simple mode of executing this operation in husbandry, with requisite certificates, and an account of expenses, in competition for the Society's honorary reward.

I am, SIR,
Your most obedient Servant,
JOHN SHIRREFF.

*Captain Head, near Haddington,
Oct. 27, 1803.*

CHARLES TAYLOR, Esq.



Rapa solo molli et aere humidulo latantur.

SATISFIED, from observation and experience, that turnips are the foundation of the best husbandry on almost all soils and situations in the arable districts of Great Britain; and

that this crop should always be drawn, except from blowing sands, or light moorish soil, on both of which it should always be in part consumed on the ground with sheep; convinced also, that turnips, if possible, should be off all soils, and the land ploughed up before the middle of December, at the latest, to secure the succeeding corn crop, and grasses, or clovers, with either of which every field that carried a turnip crop the preceding season, should, in almost every case, be sown down; and impressed with the many high advantages attending this practice, as soon as my pea and bean stubbles are ploughed up, and sown with wheat; my turnips are begun to be drawn, and stacked up for use during the following winter and spring. If the distance of the turnip field from the homestead does not exceed a quarter of a mile, two double-horse carts only are employed, and more in proportion

portion to the distance of the turnip field, or number of hands you may be able to command to carry on the work. One clever driver is sufficient for two carts, and two for three carts, &c. one cart being always in the field loading or loaded. On being brought home, the turnips are instantly tumbled out at the stack; which is done with great facility, from the construction of the carts in this district, which to convenience and strength likewise add lightness, to enable horses to move at a smart pace with them when empty. The turnips tumbled out of the cart, are trimmed of their leaves, and cleaned of any earth that may adhere to them, by women, &c. before being put into the stack. Old table-knives do very well for the purpose, and the leaves should be cut off close to the root; the back of the knife being used for removing any pieces of soil that may stick on the turnip.

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Women,

Women, &c. trim the turnips, and put them into strong coarse wicker baskets, to be carried forward by a man, who hands them to another, who lays them into or on the stack. The ground on which the turnips are placed ought to be dry bottomed. If that is not the sort of soil where you find it most convenient to make your stack, a quantity of boulders may be put on, regularly spread over the space, to the thickness of at least eighteen inches. My corn-rick yard, being dry ground, has been used as the place for keeping my turnips in. The stacks have been made about ten feet wide, by driving a row of stakes into the ground parallel to the wall of the yard, which serves instead of another row. The wall is only about five feet and a half high, and the stakes are driven to the same height. The inside of the wall and stakes are lined with compact bunches, or sheaves of wheat-straw, about ten inches

inches in diameter, placed horizontally on the ground or boulders, and introduced, as wanted, during the operation of stacking. A tire of the largest turnips are placed one above another, on the inside of the bundles of straw, more particularly on the side guarded by the stakes, till the pile reaches the height of five feet from the ground, or from the boulders, if it has been found necessary to spread any over the ground. The inner part of the stack is at the same time gradually made up with turnips put in promiscuously; along which a plank is laid, and occasionally shifted as the pile rises, for the man who builds the stack to stand on without bruising the turnips with his shoes. When the pile of turnips is reared, in the manner described, to the height of above five feet, it is gradually contracted inwards, on both sides, at an angle of about forty-five degrees, like the roof of a barn; the largest turnips being still piled on

the outside, till the roof is so far completed. The stack is every day so far finished in height as it is extended in length, and is covered with wheat-straw thatch, roped down with twisted bands of oat-straw before evening, to secure the stacked turnips from rain that may fall during the night. The thatch is laid on a foot thick, and secured in the same simple, effectual manner, that corn-ricks are covered in Northumberland, Berwickshire, and the Lothians; with this difference only, that the straw is four times as thick laid on the turnip as on the corn, to exclude cold as well as wet; and that there is a rail of wood stretched, hanging horizontally at the tops of the wall and stakes, to fix the straw ropes to, which secure the thatch on the stack. The end of the stack is every night covered with bundles of wheat-straw, which are removed next day, or when building recommences.

Three

Three men are employed in the field to load and dispatch the carts, occasionally assisting four women who draw the turnips, striking off the top root with a strong heavy knife, leaving the turnips on the tops of the drills as drawn and chopped, with the leaves all in one direction, to be readily laid hold of by the men who lift them up to the cart. The horses pass along in the space between the two rows or drills of the turnips, which may be drawn: and, being at thirty inches apart, and the extremities of the wheels about five feet from each other, it is evident a wheel runs in the middle of each space between the contiguous drills, without injuring the turnip, whether drawn or not. When the cart is about to turn, after being loaded, the men move the turnips to make room for the horses, putting them into the cart as part of the load,

Expenses

Expenses of drawing, carting, trimming, stacking, covering, &c. a statute acre of good turnip,—at the distance of not more than a quarter of a mile from the stack.

	£.	s.	d.
Two double-horse carts, and one man	-	0	16 0
Two men loading, drawing, building, &c.	-	0	8 4
Seven women drawing and trimming	-	0	4 1
Two girls trimming	-	0	1 0
Four ditto and boys ditto	-	0	1 8
Twisting ropes, drawing thatch, thatching, waste of thatch, stakes, &c. say,	-	0	3 6
			<hr/>
			£1 14 7

The above is a fair average of the expense of securing somewhat more than twelve and a quarter statute acres last season, which was all I drew ; and one field of two acres, one rood, thirty-three perches, was so far distant as to require three carts, and two drivers. That field, however, was first drawn, and the weather being fine and moderate, more work was done in proportion

tion to the length of the day, which was also longer. Women and children cannot, indeed, exert themselves with spirit, in raw cold weather. October is perhaps the best month to draw in. It is a question with me, whether the average of the acres that are under turnip in the island, if the weight exceeds twenty-four tons, does not cost more, merely for drawing and carting only. When it is considered that this operation is performed often in cold, frosty, and stormy weather, and that frequently much snow may be to be removed before the turnip can be seen. If no snow has fallen before the frost sets in, the turnips must be hoed up with instruments for the purpose. Many are cut, and much left in the ground of the lower part of the root. After all this labour, what is obtained is frequently no better than a lump of ice, environed with earth, frozen so firmly to its surface, that nothing but thawing
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in cold water can ever render it fit to be touched by the mouth of any animal whatever.

Admitting, however, the expense of drawing and carting to be the same, all that can be stated as extraordinary expense is the cost of trimming and sacking, which amounts to 11s. 3d. an acre. On the other hand, we have the advantage of having fine fresh clean turnips, always secure and at command, to carry on feeding and breeding stock ; at the same time that all loss by rotting in the spring months is prevented, which is frequently thirty and even fifty per cent. on all the crop that remains in the field, after the first of February. Above all, the practice of drawing and stacking before winter, by admitting of early ploughing to mellow the soil, secures a valuable corn, and succeeding clover crops. When all these circumstances are maturely weighed, the expense of eleven shillings and threepence

pence will, to every enlightened agriculturist, appear but trifling to obtain such very valuable advantages. The writer of this little essay has had the satisfaction of having excellent crops after his turnips, this season ; while almost every other crop in the neighbourhood was indifferent ; and some on rich dry loams, high rented, by being sown in the months of April and May, on the Spring ploughing, after turnips eaten off with sheep, were so miserable, as evidently to pay *nothing* after expenses of labour, seed, and reaping. The young clovers too, sown with these crops, have almost entirely perished from want of moisture. The loss of the crop and clover seed is not all : the system suffers a derangement, the consequences of which none but practical men can calculate.

One thing remains to be noticed, which is, that twenty-six young cattle, cows, and yearling calves, were kept
nearly

nearly three weeks on the turnip trimmings, with oat-straw along with them, to their improvement; and that many more might have been kept, had they been provided in time. A quantity of good manure was made; and, estimating all advantages arising from the consumption of the leaves in this way, at no more than 5d. a head per night, for the keep of each beast, the amount will exceed the expense of trimming and stacking the whole crop of turnips on twelve acres and a quarter. The leaves that remain on turnips after Christmas, are either unfit to be eaten, or wasted by the frosts.

T. SHIRREFF.

Certificates of the truth of the above particulars were received from John Hepburn, of Bearford; David Shirving, of Garleton; and John Donaldson, of Haddington; stating, that the quantity

tity of land in common turnips was nearly ten acres, and the average weight on sixteen perches was two tons eight hundred and thirty-six pounds avoirdupoise; that on another field of two acres, one rood, and thirty-three perches,—Mr. Shirreff had an excellent crop of Roota Baga, or Swedish Turnip, superior to the average of the field above mentioned. That the whole of Mr. Shirreff's turnips were drawn and stored before the 26th of November, and the land on which they grew ploughed before the 1st of December;—that the turnips were consumed during the months of December, January, February, March, April, and May last, by cattle and sheep, and the Roota Baga, by horses, milch cows, and pigs;—that what remained of the turnips in the first and second week of May were in excellent condition.—That the field on which the turnips grew, was sown with wheat about the 8th of March last, and that on which the Bagas grew,

grew, about the 10th of the same month with barley;—that both the crops were good, and superior to any they had seen after turnips the last crop. That they consider the wheat crop equal to thirty-two, and the barley crop equal to fifty-two, Winchester bushels on the English statute acre. That both fields are sown down with clovers, which have succeeded well also;—and that they attribute the success of the clovers, as well as corn crops, to the early removal of the turnip, and the land being ploughed up, to be mellowed by the winter's frost, which made the soil retain the proper moisture.

By a second letter from Mr. Shirreff to the Secretary, dated May 17, 1804, he states—'That he has the satisfaction to say, that to ascertain the real value of the clover grasses, he let them at public vendue for pasture this season, from the 1st of March last to Christmas next, for six pounds sixteen shillings sterling
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the Scotch, or five pounds eighteen shillings and ninepence the English statute acre.

Mr. Shirreff further adds,—that the plantation of osiers and willows for establishing which he received the Society's Gold Medal in 1803, as noticed at length in the 21st Volume, has afforded a very abundant crop this season; the peeling, drying, storing, &c. of which has afforded advantageous employment to upwards of fifty women, girls, and boys, for the last three weeks, besides to several men in cutting the rods in March last;—that he had got a quantity bolted, and sold to the Manager of the Asylum for the Blind, in Edinburgh, which had given much satisfaction.

The THANKS of the Society were this Session voted to J. DE LANCEY, Esq. of the Island of Guernsey, for the following Communications relative to the PRESERVATION of POTATOES.

SIR,

I BEG you will do me the favour to submit the annexed observations to the consideration of the Society, assuring them, I have no other object in offering them to their notice, than the public advantage; convinced that, under their patronage, the idea of burying potatoes, carrots, parsnips, &c. below the point of vegetation, may be materially extended and improved upon. I have not, from my insular situation, had an opportunity of knowing what is going on in the experimental world; it would, therefore, be a satisfaction to hear whether the idea submitted to the Society may

may, in any shape, be productive of farther improvement, as I may be tempted to carry it on.

I have the honour to be, Sir,

Your obedient Servant,

J. DE LANCEY.

Guernsey, Jan. 24, 1804.

CHARLES TAYLOR, Esq.

Experiments on preserving Potatoes.

Early in March, 1803, I observed my winter's stock of potatoes, which I had dug in October, 1802, sprouted from the mildness of the weather in this Island: it occurred to me, that, by putting them under ground, vegetation might be retarded. I accordingly took indiscriminately from my pile about three dozen, and in my court-yard dug a hole two feet and a half deep, under the protection of a South-West wall, where the rays of the sun prevail for a

few minutes only during the day at any season of the year ; then, with three pan-tiles, one at bottom, I laid most of the potatoes in the hole, and placed the other two tiles over them, in form of the roof of a house: they not containing all, I threw the remainder carelessly into the hole (having no great confidence in my experiment), covering the place over to its usual level. Business calling me from home during part of the summer, I neglected looking after my small deposit; but, on the 21st of January, 1804, nearly eleven months after covering them, I had the curiosity to examine them; when, to my astonishment, I found them (two or three excepted, which were perforated by the ground-worm, though firm) all perfectly sound, without having in the least vegetated, and in every respect fit for the purpose of sets and the use of the table, as I have boiled a few, and found them similar in taste and flavour to new potatoes.

tatoes. I further pledge myself that they were perfectly firm. I have still some of them by me, for the inspection of my friends, who all agree with me that they are so.

J. DE LANCEY.

Guernsey, Jan. 24, 1804.

SIR,

I HAVE received the favour of your letter of the 7th inst. conveying the Thanks of the Society, for my experiments in the Preservation of Potatoes, which is highly gratifying to my feelings. I avail myself of the opportunity of a friend going to London, to send three of the potatoes as a confirmation of their being fit for sets, as they are actually sprouting. I have still a few left, which I shall plant.

The potatoes I send, I pledge myself to you, are of the growth of 1802, when I first dug them out of the ground : neither have they been under the ground

M 3 since

since January 21, 1804, but lain in a closet. I have buried some others of the last year's growth, with a few carrots and parsnips, in a similar manner to my former experiments, the result of which I shall make known to the Society,

I remain, Sir,

Your obedient Servant,

J. DE LANCEY,

Guernsey, May 17, 1804.

CHARLES TAYLOR, Esq.



The above Potatoes were examined before a Committee of the Society, on the 30th of July, 1804, and found to be in a state fit for vegetation.

CHARLES TAYLOR, Secretary.

ERRATA.

Page 91—For *Curwan* read *Curwen*.

Page 325, line 6—For *steel pullies E F G H*, read *friction rollers E F and plates G H*.

Line 11—dele *on the underside*.

Line 12—dele *by the dotted arch*, and read *at*.

Line 16—For *part* read *the pivot*.

Line 17—dele *complete*.